

**REMARKS**

Claims 1, 2, 4-12, 14-20 and 31-42 are pending in the application. Claims 1, 2, 4-12, 14-20 and 31-42 stand rejected in the referenced office action.

Independent claims 1, 11 and 31 have been amended by specifying that the resonator is in contact with the fluid. Support for this amendment is found in Fig. 5 and the related discussion on the oscillator 411 in contact with the formation fluid in flow line 426.

Dependent claims 4 and 11 and have been amended to clarify the claim language and change their dependency.

No new matter has been added by the amendments. Reconsideration of the application as amended is respectfully requested. The Examiner's objections and rejections are addressed in substantially the same order as in the reference office action.

**REJECTION UNDER 35 USC § 102**

Claims 1, 11 and 31 stand rejected under 35 USC § 102(b) as being anticipated by *Birchak* (US5741962).

The present invention uses measurements of the response of a resonator in contact with a fluid downhole in conjunction with a chemometric relation to estimate a property of the fluid.

Claim 1, as amended, includes a resonator in contact with the fluid downhole. As discussed in the specifications, the response of the resonator to the actuation is responsive to a property of the fluid.

As the Examiner has noted, *Birchak* discloses some of the limitations of claim 1. However, as can be seen in Fig. 2 of *Birchak* and the related discussion at col. 5 lines 14-58, the transducer 108 is separated from the fluid 102 by a delay line 104. It is further noted in *Birchak* that

“the delay line 104 maybe a machineable glass or any other suitable material that would sufficiently delay the acoustic signal passing therethrough, preferably by a time that exceeds the transducer ringdown time...” (emphasis added).

Thus, *Birchak* does not disclose one of the elements of independent claim 1. In addition, if the transducer were actually in contact with the borehole fluid, the device of *Birchak* would be rendered inoperative due to inability to measure a signal during the transducer ringdown.

In order to sustain a rejection under 35 USC § 102, a single prior art reference must disclose each and every limitation of the claim arranged as in the claim. This is clearly not the case here. Accordingly, applicant respectfully submits that claim 1 and claims 2, 4-10, 41 and 42 that depend upon claim 1 are patentable under 35 USC § 102 over *Birchak*.

In addition, as noted above, *Birchak* actually teaches away from the claimed invention. Hence any combination of *Birchak* with any other prior art would not be permissible for the purposes of a rejection under 35 USC § 103. Accordingly, applicant

respectfully submits that claim 1 and claims 2, 4-10, 41 and 42 that depend upon claim 1 are also patentable under 35 USC § 103 over *Brichak* and the prior art of record..

Independent claim 11 includes the substantive limitations of claim 1 discussed above. Accordingly, claim 11 and claims 12 and 14-20 that depend upon claim 11 are also patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record for the same reasons that claim 1 is patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record.

Independent claim 31 includes the substantive limitations of claim 1 discussed above. Accordingly, claim 31 and claims 32 -40 that depend upon claim 41 are also patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record for the same reasons that claim 1 is patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record.

#### **REJECTION UNDER 35 USC 103**

Claims 2, 4, 12, 14, 32-34 and 41-42 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* (US63465813).

The patentability of these claims has been addressed above with reference to the rejection under 35 USC § 102. As noted above, *Brichak* teaches away from the claimed invention.

Claims 5-8, 15-18, 35-38 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* as applied to claim 1 and in view of *McFarland et al.* (US6182499).

The patentability of these claims has been addressed above with reference to the rejection under 35 USC §102. The combination of *Kleinberg* and *McFarland* does not teach or suggest the particular elements of the independent claims discussed above.

Claims 9-10, 19-20, and 39-40 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* and *McFarland et al.* as applied to claim 1 and in view of *He et al.* (US5798982).

The patentability of these claims has been addressed above with reference to the rejection under 35 USC §102. The combination of *Kleinberg*, *McFarland* and *He* does not teach or suggest the particular elements of the independent claims discussed above.

Claims 41-42 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg*, *McFarland et al.* and *He et al.* as applied to claim 1 and in view of *Netzer* (US5763781).

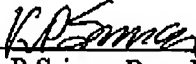
The patentability of these claims has been addressed above with reference to the rejection under 35 USC §102. The combination of *Kleinberg*, *McFarland*, *He* and *Netzer* does not teach or suggest the particular elements of the independent claims discussed above.

The application is now believed to be in condition for allowance.

The Commissioner is hereby authorized to charge any fee and credit any overpayment associated with this response to **Deposit Account No. 02-0429(584-37008-USCP)**.

Respectfully submitted,

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